



[4910-13]

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 25

[Docket No. FAA-2017-0240; Special Conditions No. 25-691-SC]

Special Conditions: Gulfstream Aerospace Corporation GVII-G500; Airbag Systems on Multiple-Place and Single-Place Side-Facing Seats

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final special conditions; request for comments.

SUMMARY: These special conditions are issued for the Gulfstream Aerospace Corporation (Gulfstream) GVII-G500 airplane. This airplane will have a novel or unusual design feature when compared to the state of technology envisioned in the airworthiness standards for transport-category airplanes. This design feature is airbag systems on multiple-place and single-place side-facing seats. The applicable airworthiness regulations do not contain adequate or appropriate safety standards for this design feature. These special conditions contain the additional safety standards that the Administrator considers necessary to establish a level of safety equivalent to that established by the existing airworthiness standards.

DATES: This action is effective on Gulfstream on **[date of publication in the federal register]**.

We must receive your comments by **[date 45 days after publication]**.

ADDRESSES: Send comments identified by docket number FAA-2017-0240 using any of the following methods:

- *Federal eRegulations Portal:* Go to <http://www.regulations.gov/> and follow the online instructions for sending your comments electronically.

- *Mail:* Send comments to Docket Operations, M-30, U.S. Department of Transportation (DOT), 1200 New Jersey Avenue, SE., Room W12-140, West Building Ground Floor, Washington, DC, 20590-0001.
- *Hand Delivery or Courier:* Take comments to Docket Operations in Room W12-140 of the West Building Ground Floor at 1200 New Jersey Avenue, SE., Washington, DC, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.
- *Fax:* Fax comments to Docket Operations at 202-493-2251.

Privacy: The FAA will post all comments it receives, without change, to <http://www.regulations.gov/>, including any personal information the commenter provides. Using the search function of the docket Web site, anyone can find and read the electronic form of all comments received into any FAA docket, including the name of the individual sending the comment (or signing the comment for an association, business, labor union, etc.). DOT's complete Privacy Act Statement can be found in the **Federal Register** published on April 11, 2000 (65 FR 19477-19478), as well as at <http://DocketsInfo.dot.gov/>.

Docket: Background documents or comments received may be read at <http://www.regulations.gov/> at any time. Follow the online instructions for accessing the docket or go to Docket Operations in Room W12-140 of the West Building Ground Floor at 1200 New Jersey Avenue, SE., Washington, DC, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

FOR FURTHER INFORMATION CONTACT: Alan Sinclair, FAA, Airframe and Cabin Safety, ANM-115, Transport Airplane Directorate, Aircraft Certification Service, 1601 Lind Avenue SW., Renton, Washington 98057-3356; telephone 425-227-2195; facsimile 425-227-1320.

SUPPLEMENTARY INFORMATION: The FAA has determined that notice of, and opportunity for prior public comment on, these special conditions is impracticable because the substance of these special conditions has been subject to the public comment process in several prior instances with no substantive comments received. The FAA therefore finds that good cause exists for making these special conditions effective upon publication in the Federal Register.

Comments Invited

We invite interested people to take part in this rulemaking by sending written comments, data, or views. The most helpful comments reference a specific portion of the special conditions, explain the reason for any recommended change, and include supporting data.

We will consider all comments we receive by the closing date for comments. We may change these special conditions based on the comments we receive.

Background

On March 29, 2012, Gulfstream Aerospace Corporation applied for a type certificate for their new Model GVII-G500 airplane. The Model GVII-G500 airplane will be a twin-engine, transport-category business jet capable of accommodating up to 19 passengers. The Model GVII-G500 airplane will have a maximum takeoff weight of 76,850 lbs.

Type Certification Basis

Under Title 14, Code of Federal Regulations (14 CFR) 21.17, Gulfstream must show that the Model GVII-G500 airplane meets the applicable provisions of 14 CFR part 25, as amended by Amendments 25-1 through 25-129.

If the Administrator finds that the applicable airworthiness regulations (i.e., part 25) do not contain adequate or appropriate safety standards for the Model GVII-G500 airplane because

of a novel or unusual design feature, special conditions are prescribed under the provisions of § 21.16.

Special conditions are initially applicable to the model for which they are issued. Should the type certificate for that model be amended later to include any other model that incorporates the same or similar novel or unusual design feature, the special conditions would also apply to the other model under § 21.101.

In addition to the applicable airworthiness regulations and special conditions, Model GVII-G500 airplanes must comply with the fuel-vent and exhaust-emission requirements of 14 CFR part 34, and the noise-certification requirements of 14 CFR part 36. The FAA must issue a finding of regulatory adequacy under § 611 of Public Law 92-574, the “Noise Control Act of 1972.”

The FAA issues special conditions, as defined in 14 CFR 11.19, in accordance with § 11.38, and they become part of the type certification basis under § 21.17(a)(2).

Novel or Unusual Design Feature

The Model GVII-G500 airplane will incorporate the following novel or unusual design feature:

Airbag systems on multiple-place and single-place side-facing seats.

Discussion

Side facing seats are considered a novel design for transport-category airplanes that include 14 CFR part 25, Amendment 25-64, in their certification bases, because this feature was not anticipated when those airworthiness standards were issued. Therefore, the existing regulations do not provide adequate or appropriate safety standards for occupants of side-facing seats. For the Model GVII-G500 airplane, FAA Special Conditions No. 25-618-SC, “Technical

Criteria for Approving Side-Facing Seats,” proposed special conditions to address the certification of single- and multiple-place side-facing seats. Those proposed special conditions include condition 2(e), which requires the axial rotation of the upper leg (femur) to be limited to 35 degrees in either direction from the nominal seat position. To accommodate that requirement, Gulfstream has developed a new airbag system that will be installed close to the floor, and which is designed to limit the axial rotation of the occupant’s upper legs.

These special conditions contain the additional safety standards that the Administrator considers necessary to establish a level of safety equivalent to that established by the existing airworthiness standards.

Applicability

As discussed above, these special conditions are applicable to the Gulfstream Model GVII-G500 airplane. Should Gulfstream apply at a later date for a change to the type certificate to include another model incorporating the same novel or unusual design feature, these special conditions would apply to that model as well.

Conclusion

This action affects only certain novel or unusual design features on one model of airplane. It is not a rule of general applicability.

The substance of these special conditions has been subjected to the notice and comment period in several prior instances and has been derived without substantive change from those previously issued. It is unlikely that prior public comment would result in a significant change from the substance contained herein. Therefore, the FAA has determined that prior public notice and comment are unnecessary and impracticable, and good cause exists for adopting these special conditions upon publication in the **Federal Register**. The FAA is requesting comments to allow

interested persons to submit views that may not have been submitted in response to the prior opportunities for comment described above.

List of Subjects in 14 CFR Part 25

Aircraft, Aviation safety, Reporting and recordkeeping requirements.

The authority citation for these special conditions is as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701, 44702, 44704.

The Special Conditions

Accordingly, pursuant to the authority delegated to me by the Administrator, the following special conditions are issued as part of the type certification basis for Gulfstream Aerospace Corporation Model GVII-G500 airplanes.

In addition to the requirements of §§ 25.562 and 25.785, and Special Conditions No. 25-495-SC, the following special conditions are part of the type certification basis for the Gulfstream Model GVII-G500 airplane with leg-flail airbags installed on side-facing seats.

1. For seats with a leg-flail airbag system, the system must deploy and provide protection under crash conditions where it is necessary to prevent serious injury. The means of protection must take into consideration a range of stature from a 2-year-old child to a 95th-percentile male. At some buttock popliteal length and effective seat-bottom depth, the lower legs will not be able to form a 90-degree angle relative to the upper leg; at this point, the lower leg flail would not occur. The leg-flail airbag system must provide a consistent approach to prevention of leg flail throughout that range of occupants whose lower legs can form a 90-degree angle relative to the upper legs when seated upright in the seat. Items that need to be considered include, but are not limited to, the range of occupants' popliteal height, the range of occupants' buttock popliteal length, the design

of the seat effective height above the floor, and the effective depth of the seat-bottom cushion.

2. The leg-flail airbag system must provide adequate protection for each occupant regardless of the number of occupants of the seat assembly, considering that unoccupied seats may have an active leg-flail airbag system.
3. The leg-flail airbag system must not be susceptible to inadvertent deployment as a result of wear and tear, or inertial loads resulting from in-flight or ground maneuvers (including gusts and hard landings), and other operating and environmental conditions (vibrations, moisture, etc.) likely to occur in service.
4. Deployment of the leg-flail airbag system must not introduce injury mechanisms to the seated occupant, nor result in injuries that could impede rapid egress.
5. Inadvertent deployment of the leg-flail airbag system, during the most critical part of the flight, must either meet the requirement of § 25.1309(b), or not cause a hazard to the airplane or its occupants.
6. The leg-flail airbag system must not impede rapid egress of occupants from the airplane 10 seconds after airbag deployment.
7. The leg-flail airbag system must be protected from lightning and high-intensity radiated fields (HIRF). The threats to the airplane specified in existing regulations regarding lightning (§ 25.1316) and HIRF (§ 25.1317) are incorporated by reference for the purpose of measuring lightning and HIRF protection.
8. The leg-flail airbag system must function properly after loss of normal airplane electrical power, and after a transverse separation of the fuselage at the most critical location. A separation at the location of the leg-flail airbag system does not have to be considered.

9. The leg-flail airbag system must not release hazardous quantities of gas or particulate matter into the cabin.
10. The leg-flail airbag system installation must be protected from the effects of fire such that no hazard to occupants will result.
11. A means must be available to verify the integrity of the leg-flail airbag system's activation system prior to each flight, or the leg-flail airbag system's activation system must reliably operate between inspection intervals. The FAA considers that the loss of the leg-flail airbag system's deployment function alone (i.e., independent of the conditional event that requires the leg-flail airbag system's deployment) is a major-failure condition.
12. The airbag inflatable material may not have an average burn rate of greater than 2.5 inches per minute when tested using the horizontal flammability test defined in part 25, appendix F, part I, paragraph (b)(5).
13. The leg-flail airbag system, once deployed, must not adversely affect the emergency-lighting system (i.e., must not block floor-proximity lights to the extent that the lights no longer meet their intended function).

Issued in Renton, Washington, on June 8, 2017.

Michael Kaszycki
Assistant Manager, Transport Airplane Directorate
Aircraft Certification Service
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